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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/708,658	11/09/2000	Nicholas Sheppard Bromer		3157

7590

10/03/2002

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EXAMINER

DRUAN, THOMAS J

ART UNIT

PAPER NUMBER

3724

DATE MAILED: 10/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/708,658

Applicant(s)

BROMER, NICHOLAS SHEPPARD

Examiner

Thomas J. Druan, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2002 & 04 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to Applicant's amendments received on 01 July 2002 & 04 July 2002.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

3. Claims 1, 5, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,431,071 to Williams.

Williams discloses the invention as claimed, including a blade comprising a substrate 1 including a specular surface, and a hard plate 3, made of ceramic such as vanadium carbide (column 4, lines 1-6), deposited on the specular surface. The specular surface of the substrate is polished flat with a surface finish of between 0.1RA and 2.0RA, or between 0.1 and 2.0 microns, which is on the order of a wavelength of light. The substrate is beveled towards a cutting edge 5 which would be straight, on the order of a wavelength similar to the surface finish, in a cutting direction. The hard plate has a thickness of about 2 microns, which is on the order of a light wavelength.

Claim Rejections - 35 USC § 103

4. Claims 1-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,933,058 to Bache et al. in view of USPN 3,754,329 to Lane.

Bache et al. discloses the invention substantially as claimed including a blade with a substrate 10 and a thin, hard plate 11 deposited on the substrate. The hard plate

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11 is about 0.3 microns (3000 Å) (column 2, lines 65-68). Bache et al. discloses that the substrate can include a surface portion of chromium on a base portion of stainless steel to provide improved adhesion of the hard plate (column 5, lines 52-59).

Bache et al. does not disclose the reflectivity of the blade, the flatness of the hard plate, or the straightness of the cutting edge. Lane teaches that depositing chromium on a blade using an RF sputtering method causes the individual chromium atoms "to seek out one particular location in the substrate and repel other atoms from that immediate area until the entire substrate is uniformly covered and thus attains a fine, even coating surface" (column 6, line 57 – column 7, line 25), which provides resistance to rust and corrosion. It can be inferred that the chromium, known for its reflective properties, is distributed evenly on the blade so as to create a specular surface which is flat on the order of a wavelength of light. As such, a layer deposited on top of the chromium layer would be microscopically flat on the order of a wavelength, including the part at cutting edge that would be straight on the order of a wavelength. It would have been obvious to one skilled in the art at the time of the invention to use the RF sputtering of Lane on the blade of Bache et al. in order to produce a uniform coating of chromium which would provide resistance to rust and corrosion, and would inherently be specular due to the reflective properties of chromium.

5. Claims 1, 2, and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 3,911,579 to Lane et al.

Lane et al. discloses the invention substantially as claimed, including a blade with a substrate, made of a base portion 101 and a surface portion I, said substrate having

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deposited thereon a thin, hard plate II. Said surface portion is glass (column 5, lines 55-65).

Lane et al. does not mention if the surface portion I of the substrate comprises a specular surface. Examiner takes Official Notice that it would have been obvious to one skilled in the art at the time of the invention that the substrate would be specular since the glass will take on the characteristics of the base portion once it has been deposited, and since it is well known that honed razor blades are generally somewhat specular, and a specular blade is sharper than a dull blade (i.e. a freshly honed blade versus a used or corroded or roughly sharpened blade), it follows that the glass will be specular as well since a honed blade would be used and because it is preferable to have a sharp blade.

Response to Arguments

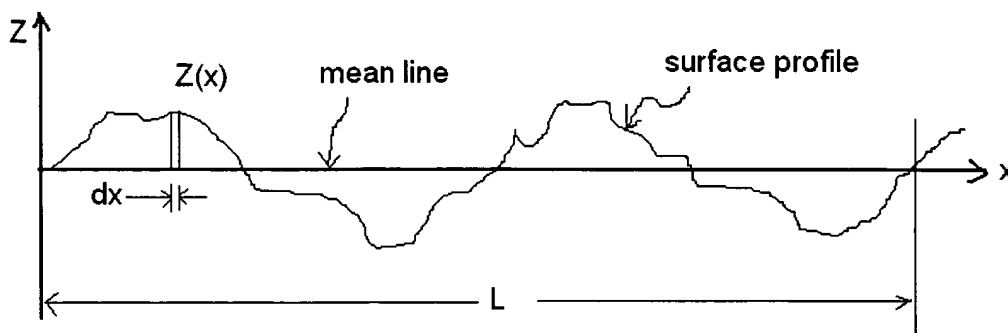
6. Applicant's arguments filed 01 July 2002 have been fully considered but they are not persuasive. Applicant contends that Williams teaches against a critical surface finish, and against a "highly polished" surface. Furthermore, Applicant argues against the applicability of the standard measure "RA," stating that it is independent of the length of the sample. Applicant argues that Lane does not disclose a specular surface. Applicant further contends that the base of Lane et al. is not specular, and challenges the assertion that a specular blade is sharper than a dull blade, and that the glass would be specular.

Applicant's remarks are well taken; however, it is the Examiner's position that the references anticipate and make obvious the claimed invention. Williams discloses a

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blade with a disclosed surface roughness range of 0.1RA-2.0RA (which corresponds to 0.1 μ m-2.0 μ m), where RA is the arithmetic mean of the absolute ordinate values $Z(x)$ of the height of a surface profile above or below a mean line within a sampling length L ,

represented by the equation $RA = \frac{1}{L} \int_0^L |Z(x)| dx$.



The sampling length is not restricted to only one area enclosed above the mean line and one area below the mean line, but can in fact include many such peak and valley areas. Given a typical surface with fairly regular roughness and a sampling length that includes several peaks and valleys, RA would provide a good measure of the average ordinate deviations above and below the mean line. A very long sampling length will not necessarily mean that the surface will be smooth and specular since increasing the sampling length will likely just increase the number of peaks and valleys with similar roughness characteristics, giving a more accurate average roughness. Also, the term “smooth” normally refers to an average roughness close to zero, and thus stating that the smoothness has a range implies an inherent allowable roughness. Therefore, in order to be “smooth on the order of a light wavelength,” an average roughness RA on the order of a light wavelength would be anticipatory. Since ultraviolet

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light is on the order of a nanometer (10^{-9} m) and infrared is on the order of a millimeter (10^{-3} m), an average roughness of a micrometer (10^{-6} m) is within the range, and therefore anticipates the claimed range.

Lane teaches the use of sputtering chromium onto the blade of Bache et al. to provide an even coating to completely cover the blade. Chromium is well known to be a highly reflective, specular metal, especially when laid down in a uniform, pore-free manner. Given a thickness of at most 625 Angstroms (column 6, lines 41-49), maintaining a pore-free surface will require a maximum surface roughness of less than 625 Angstroms, or $0.0625\text{ }\mu\text{m}$, which is on the order of a wavelength of light (i.e. specular).

Lane et al. discloses a blade with multiple deposition layers to provide a cutting edge displaying certain characteristics associated with refractory materials. The cutting instrument of Lane et al. comprises a blade that has been ground and honed to produce a sharp cutting edge (column 4, lines 42-47). Honing produces an average roughness of between $0.1\text{ }\mu\text{m}$ and $0.8\text{ }\mu\text{m}$, and would therefore be on the order of a wavelength of light, meaning that the blade would be specular. Sputtering a 200 Angstrom layer of glass on top of the specular blade would produce a specular surface since deviations of less than 200 Angstroms would not put the surface roughness out of the range of visible light.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Druan, Jr. whose telephone number is 703-308-4200. The examiner can normally be reached on M-F (8:30-6:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Allan N. Shoap can be reached on 703-308-1082. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.



BOYER D. ASHLEY
PRIMARY EXAMINER



tjd

September 30, 2002